

## A Checklist and Notes on the Current Status of the Birds of New Georgia, Western Province, Solomon Islands

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### Summary

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A checklist of the birds of New Georgia was compiled over three years from December 1985 to August 1988. A total of 70 species were recorded. Seven habitat types were recognised: (1) primary forest, (2) secondary forest, (3) open areas, (4) villages, gardens and plantations, (5) mangroves, (6) shorelines, and (7) marine. Species observed in each of these habitats were rated as abundant, common or present. The majority of species occurred in primary forest (33 species) and secondary forest (29 species). The present species composition is compared with that recorded by the Whitney South Sea Expedition in the 1930s and by Sibley in 1945. Eight species found in the 1930s and three in 1945 were not observed in this survey but two species (*Gallirallus philippensis* and *Aceros plicatus*) were recorded for the first time on New Georgia. Changes in the species structure of the avifauna is discussed in relation to loss of primary forest caused by logging and industrial development. It is concluded that while considerable species diversity may be maintained, a number of species confined to undisturbed forest are endangered.

### Introduction

Although the avifauna of the Solomon Islands has been thoroughly described (Rothschild & Hartert 1905; Mayr 1945) and discussed with regard to endemism and zoogeography (Mayr 1945; Greenslade 1968; Diamond *et al.* 1976) there are few recent accounts of the birds of individual islands. Such information is significant for the Solomon Islands where a number of species may now be extinct (Diamond 1987). The current status and distribution of birds is of particular relevance in the Western Province, where extensive logging has occurred in the last 20 years, and where industrial development is beginning on New Georgia with the building of a deep water port and factories at Noro.

The present account of the birds of New Georgia was compiled from the author's records for three years from December 1985 to August 1988 and, while not exhaustive, indicates the present status of the avifauna. The data are compared with earlier accounts (Mayr 1945; Sibley 1951)

and should provide a baseline for determining possible future changes in the composition of the bird fauna.

### Study area and methods

The study was confined to the island of New Georgia together with the neighbouring islands of Vona Vona and Kohinggo (Arundel) (Fig. 1). New Georgia, the largest island of the Western Province, is some 80 km long and up to 40 km wide, largely covered by rainforest (Whitmore 1969) and edged by lagoons enclosed by fringing coral reefs (Stoddart 1969).

The climate is equatorial. The annual rainfall at Munda was 2583 mm in 1987 and 3689 mm in 1988 (Fig. 2a). The annual rainfall at Repi Island in Vona Vona lagoon in 1988 was 3292 mm (Fig. 2b). Although rain occurred throughout the year there was a distinct peak from October to April at Munda. No such pattern occurred at Vona Vona but as at Munda, rainfall was lower in May and June. Air temperatures varied little, with a maximum of 31°C from about November to March and a minimum of 29°C from April to October. Overnight lows reached 23-24°C (Solomon Islands Meteorological Bureau).

Fieldwork was undertaken during a Fisheries Research program

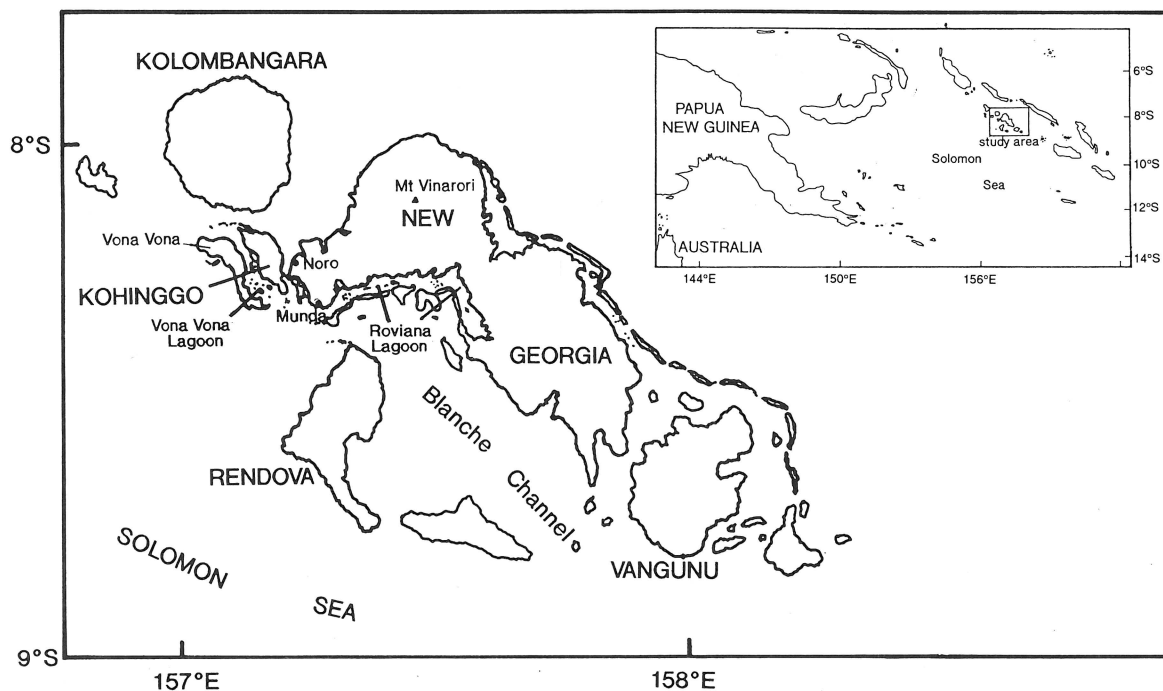


FIGURE 1 Western Solomon Islands showing the New Georgia study area.

conducted by CSIRO Division of Fisheries based at Munda and Noro (Fig. 1). Observations were made on five visits to New Georgia between December 1985 and August 1988, each of two to three weeks' duration. All habitat types (primary forest, secondary forest, mangroves, open shorelines, coral reefs and open sea, together with settled and cultivated areas) were visited regularly and species lists compiled. Each species was rated arbitrarily as 'abundant', 'common' or 'present'. No visits were made to Mt. Vinarori (800-1000 m altitude) in the central hills. All observations were made with 10 x 40B binoculars and were aided by the use of a tape recorder.

Limited observations were made on the nearby islands of Kolombangara (one week) and Rendova (three days) and data relevant to New Georgia are included in the present paper.

The order of species follows Morony *et al.* (1975) and the common names are mainly those used by Mayr (1945, 1955).

## Results

The 70 species recorded from New Georgia are listed in Table 1 which also indicates their relative abundance in the various habitats. Marked changes in the apparent abundance of certain land and freshwater species since 1945 (Sibley 1951) are noted in the individual species accounts below.

### Species accounts

*Puffinus pacificus* Wedge-tailed Shearwater. Common

over deep waters during the north-west monsoon period. Largest numbers were observed south of New Georgia.

*Sula leucogaster* Brown Booby. Common in inshore and offshore waters throughout the year. It is attracted to fishing vessels and numbers roost on the navigation platforms leading to Noro from the Munda bar and in Hathorn Sound.

*Fregata ariel* Least Frigatebird. Present in all waters throughout the year. Most were seen in Blackett Strait between Vona Vona and Kolombangara in August 1987. Males, females, juveniles and sub-adults of both sexes were noted. Great Frigatebird *Fregata minor* was not observed.

*Butorides striatus* Striated Heron. Common in all mangrove areas and extending to shorelines where *Hibiscus* spp. and coconut palms are dominant. Also observed perching on unoccupied fishing boats moored in Roviana Lagoon.

*Egretta garzetta* Little Egret. Only observed on two occasions during the north-west monsoon on sandy shorelines of Vona Vona Island and Repi Island in Vona Vona lagoon. This species has different modes of feeding from other egrets and the birds observed were feeding in the manner described by Whitfield & Blaber (1979). The absence of shallow sandy or muddy intertidal areas over

most of the study area may preclude its occurrence as it prefers to fish in such areas (Whitfield & Blaber 1979). The sole previous records in the area were by Hadden (1981) for Buka and Bougainville.

*Egretta sacra* Eastern Reef Egret. In contrast to the previous species, common along most shorelines and intertidal reef areas where the substratum is rocky. The majority of birds seen were grey phase.

*Anas superciliosa* Pacific Black Duck. Common on all rivers and mangrove lined estuaries including Lembu, Mbareke, Ondongo and Hilele. Pairs present on even the smallest rivers. Frequently seen feeding, apparently on invertebrates, at low tide on intertidal mudflats adjacent to mangroves.

*Pandion haliaetus* Osprey. Common in all coastal areas throughout the year. Frequently seen fishing in lagoon areas, particularly Vona Vona Lagoon.

*Accipiter albogularis* Pied Hawk. Present although scarce. One individual seen flying along the shores of Vona Vona Lagoon in March while another on the ground at Munda airfield in July. Both birds were adults.

*Accipiter novaehollandiae* Grey (Rufous-breasted) Goshawk. Present but rare. A single adult seen once on Vona Vona. This species is the commonly seen forest hawk on Guadalcanal and its scarcity on New Georgia is noteworthy.

*Haliaeetus sanfordi* Sanford's Eagle. This eagle was present along all shorelines, particularly where coconut trees form the fringe. It was not found in true forest areas but was observed over cultivated ground. It was seen taking fish discards from the water surface after the fashion of fish eagles and scavenging on beaches.

*Haliastur indus* Brahminy Kite. Common in all coastal and lagoon areas throughout the year. Seen feeding on fish discards and scavenging along shorelines and in the vicinity of villages.

*Megapodius freycinet* Megapode. Common resident that is most common in primary forest but also seen in secondary forest. Mainly coastal and occurs even on small offshore islands within Roviana and Vona Vona lagoons. Still relatively numerous despite being an esteemed food.

*Gallirallus philippensis* Buff-banded Rail. Group of three seen alongside the road in Munda in January 1988. Their subspecific affinity could not be determined. The ochre breast band was narrow and 'ragged'. The species is common on Guadalcanal but has not previously been reported from the Western Province.

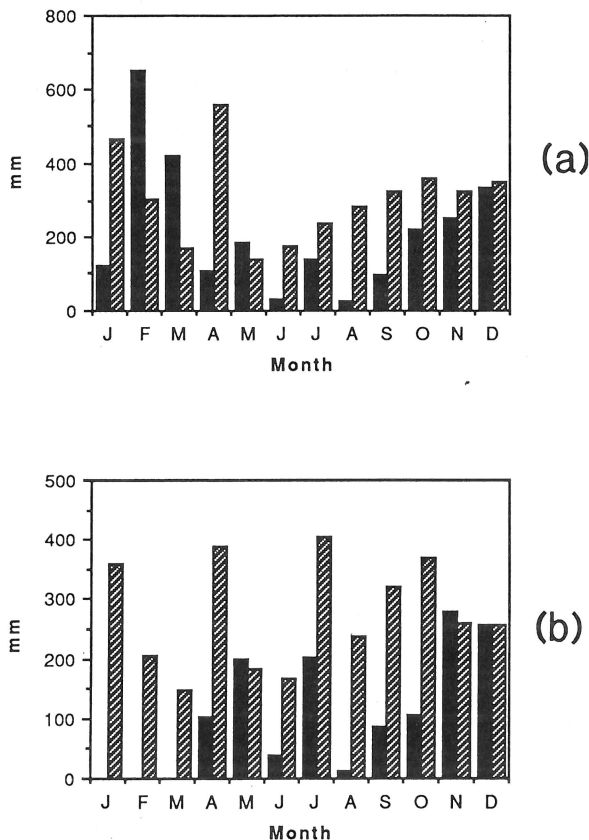


FIGURE 2 Monthly rainfall totals (mm) for 1987 (black bars) and 1988 (hatched bars) at (a) Munda and (b) Vona Vona.

*Porphyrio porphyrio* Purple Swamphen (Gallinule). Common to abundant resident on mainland New Georgia but not seen on any smaller islands. Particularly noticeable in cleared areas of forest where it frequents cultivated gardens adjacent to primary forest. However, not observed in undisturbed lowland forest. Individuals noted at most times of the day along the road between Munda and Noro. Possibly increasing in abundance.

'Undescribed Rail'. A large dark, brown-black bird not much smaller than a swamphen but much larger than a Bush-hen and having shorter stouter legs that appeared grey, was seen on three occasions on the road between Munda and Noro in undisturbed lowland forest. The bill was noticeably long and powerful and of a light brownish colour. The underside of the bird was paler brown/grey. Two of the sightings were early in the morning in good light, and the other towards evening. The status of this secretive species on New Georgia is unknown.

TABLE 1 Species recorded from various habitats in New Georgia from 1985 to 1988 (1 = primary forest; 2 = secondary forest; 3 = open areas; 4 = villages, gardens and plantations; 5 = mangroves; 6 = shorelines; 7 = marine; A = abundant; C = common; P = present; - = not recorded).

Species	Habitat type						
	1	2	3	4	5	6	7
<i>Puffinus pacificus</i>	-	-	-	-	-	-	C
<i>Sula leucogaster</i>	-	-	-	-	-	C	C
<i>Fregata ariel</i>	-	-	-	-	-	-	P
<i>Butoroides striatus</i>	-	-	-	-	C	C	-
<i>Egretta garzetta</i>	-	-	-	-	-	P	-
<i>Egretta sacra</i>	-	-	-	-	-	C	-
<i>Anas superciliosa</i>	-	-	-	-	C	C	-
<i>Pandion haliaetus</i>	-	-	-	-	-	C	-
<i>Accipiter albogularis</i>	-	-	P	-	-	P	-
<i>Accipiter novaehollandiae</i>	P	-	-	-	-	-	-
<i>Haliaeetus sanfordi</i>	-	-	-	P	-	P	-
<i>Haliastur indus</i>	-	-	-	C	C	C	-
<i>Megapodius freycinet</i>	C	P	-	-	-	-	-
<i>Gallirallus philippensis</i>	-	-	-	P	-	-	-
" <i>Nesoclopeus woodfordi</i> ?"	P	-	-	-	-	-	-
<i>Porphyrio porphyrio</i>	-	P	-	A	-	-	-
<i>Burhinus neglectus</i>	-	-	-	-	-	P	-
<i>Pluvialis fulva</i>	-	-	A	-	-	A	-
<i>Limosa lapponica</i>	-	-	-	-	-	P	-
<i>Numenius madagascariensis</i>	-	-	-	-	-	P	-
<i>Numenius phaeopus</i>	-	-	-	-	A	C	-
<i>Tringa brevipes</i>	-	-	-	-	-	C	-
<i>Tringa hypoleucos</i>	-	-	-	-	C	C	-
<i>Anous stolidus</i>	-	-	-	-	-	A	A
<i>Sterna albifrons</i>	-	-	-	-	-	P	-
<i>Sterna bergii</i>	-	-	-	-	-	A	A
<i>Sterna dougalli</i>	-	-	-	-	-	P	P
<i>Sterna hirundo</i>	-	-	-	-	-	C	P
<i>Sterna lunata</i>	-	-	-	-	-	-	P
<i>Sterna sumatrana</i>	-	-	-	-	-	C	C
<i>Chalcophaps stephani</i>	C	-	-	-	-	-	-
<i>Ducula pistrinaria</i>	-	-	-	P	-	P	-
<i>Ducula rubricera</i>	A	A	-	A	-	-	-
<i>Ptilinopus superbus</i>	A	P	-	-	-	-	-
<i>Ptilinopus viridis</i>	A	C	-	A	-	-	-
<i>Chalcopsitta cardinalis</i>	A	A	-	A	A	-	-
<i>Trichoglossus haematodus</i>	A	A	-	A	-	-	-
<i>Cacatua ducorpsi</i>	A	C	C	C	-	-	-
<i>Eclectus roratus</i>	A	-	-	-	-	-	-
<i>Geoffroyus heteroclitus</i>	-	P	-	-	-	-	-
<i>Centropus milo</i>	C	C	-	C	-	-	-
<i>Cuculus variolosus</i>	-	P	-	-	-	-	-
<i>Eudynamis scolopacea</i>	A	-	-	-	-	-	-
<i>Collocalia esculenta</i>	A	A	A	C	-	-	-
<i>Collocalia vanikorensis</i>	A	A	A	A	-	-	-
<i>Hemiprocne mystacea</i>	A	-	A	-	-	-	-
<i>Alcedo atthis</i>	-	-	-	-	C	-	-
<i>Ceyx pusilla</i>	A	-	-	-	A	-	-
<i>Halcyon chloris</i>	C	C	-	C	-	-	-
<i>Halcyon sancta</i>	-	P	P	P	-	-	-
<i>Halcyon saurophaga</i>	-	-	-	-	-	P	-
<i>Eurystomus orientalis</i>	-	C	C	-	-	-	-
<i>Aceros plicatus</i>	P	-	-	-	-	-	-
<i>Hirundo tahitica</i>	-	-	A	A	-	-	-

Continued next page.



TABLE 1 Continued.

Species	Habitat type						
	1	2	3	4	5	6	7
<i>Coracina lineata</i>	A	-	-	-	-	-	-
<i>Coracina papuensis</i>	P	A	A	A	-	-	-
<i>Coracina tenuirostris</i>	P	P	-	-	-	-	-
<i>Monarcha barbatus</i>	C	C	-	-	-	-	-
<i>Monarcha richardsii</i>	A	A	-	-	-	-	-
<i>Myiagra ferrocyanea</i>	A	P	-	-	-	-	-
<i>Rhipidura cockerellii</i>	C	A	-	-	-	-	-
<i>Rhipidura leucophrys</i>	-	A	A	A	-	A	-
<i>Rhipidura rufifrons</i>	C	C	-	-	P	-	-
<i>Nectarinia jugularis</i>	P	A	A	A	-	C	-
<i>Zosterops rendovae</i>	A	A	-	A	-	-	-
<i>Myzomela eichhorni</i>	C	-	-	P	-	-	-
<i>Aplonis cantoroides</i>	-	A	-	A	-	-	-
<i>Aplonis grandis</i>	A	-	-	C	-	-	-
<i>Aplonis metallica</i>	A	A	-	A	-	-	-
<i>Mino dumontii</i>	A	A	-	A	-	-	-
Number of species	33	29	12	25	9	26	9

*Burhinus neglectus* Beach Thick-knee (Stone-Curlew). Present in both seasons along lagoon shores, particularly on the sandy beaches of small islands within Roviana and Vona Vona lagoons. Usually seen in pairs.

*Pluvialis fulva* Pacific Golden Plover. Abundant migrant in the wet season. Occurs on muddy beaches, reef flats at low tide and on grasslands. Largest numbers (> 100) seen on Munda airfield.

*Limosa lapponica* Bar-tailed Godwit. Small numbers seen during March 1987 (summer) but none recorded in 1988. Mainly on intertidal reef flats.

*Numenius madagascariensis* Eastern Curlew. Only a single individual recorded in December 1985 at the southern end of the Diamond Narrows.

*Numenius phaeopus* Whimbrel. Abundant during the austral summer but remaining common in the winter. Most common along mangrove creeks but seen along most shores.

*Tringa brevipes* Grey-tailed Tattler. Common in groups of 2-10 on reef flats throughout the area during the austral summer. Recorded from late December until the end of March.

*Tringa hypoleucos* Common Sandpiper. Common throughout the year along all shorelines including mangrove creeks as well as shores of small lagoon islands. No

apparent difference in numbers between summer and winter.

*Anous stolidus* Common Noddy. Abundant in all in-shore waters at all times of the year. The major roost for the birds seen around New Georgia appears to be a small island off Kenelo Point on Rendova where, during the day, more than 1000 have been observed. Flocks of 50-200 birds are common in the lagoons where they feed primarily on small pelagic fishes (mainly *Spratelloides* spp. and *Stolephorus* spp.) that are being pursued by predatory schools of Island Bonito *Euthynnus affinis* (Blaber *et al.* in press). Also seen in smaller numbers over deeper waters between the islands but does not appear to follow fishing boats. There were no observations of *A. minutus* Black Noddy.

*Sterna albifrons* Little Tern. Present in small numbers during the austral summer, feeding over lagoon areas. They exhibited the typical feeding behaviour of the species — hovering and plunging after prey and then flying quickly to another site. Not seen roosting. Most individuals observed had a yellow bill with marked black tip. The sole previous record was by Hadden (1981) for Bougainville.

*Sterna bergii* Crested Tern. Abundant throughout the year in all coastal and offshore waters. Frequently observed fishing in lagoons (particularly on *Spratelloides* spp.) or following fishing boats and feeding on discards. Often in association with *Anous stolidus* feeding around schools of predatory fish. During April 1987 about 20 birds seen

feeding on flying fish (Exocoetidae) in the air, in the Blanche Channel. Observations over a 30-minute period showed that half the attempts to catch flying fish were successful.

*Sterna dougallii* Roseate Tern. Present in small numbers. Seen in only July 1987 and January 1988, usually singly over lagoons.

*Sterna hirundo* Common Tern. Observed throughout the year but only common in the austral summer when individual birds were frequently seen fishing in the lagoons.

*Sterna lunata* Grey-backed Tern. A single individual seen near the Munda bar in July 1987. Distinguished from *S. anaetheta* by paler back, thinner more delicate looking bill and overall rather cleaner-cut appearance. Both species were previously observed near Tulagi in the Central Solomons. The bird at Munda was seen about 25 m from the boat.

*Sterna sumatrana* Black-naped Tern. Common throughout the year, particularly on isolated sandy spits and beaches in the lagoons. The main roost appears to be with *Anous stolidus* on the island off Kenelo Point, Rendova.

*Chalcophaps stephani* Brown-backed Ground Dove. Common resident mainly in primary forest. More often heard than seen but still present in most forested areas, even adjacent to villages.

*Ducula pistrinaria* Grey Pigeon. Common resident. None seen away from the coast where it seems to be restricted to areas where thick forest reaches the shore. Flocks were also seen among well developed coastal coconut plantations. Apparently shy of human habitation as was not observed adjacent to coastal villages or around Munda or Noro. Most common in south-eastern New Georgia along the shores of Blanche Channel.

*Ducula rubricera* Red-knobbed Pigeon. Abundant throughout the island in both primary and secondary forest. Wherever there are fruiting trees this pigeon is present, usually in association with *Ptilinopus viridis*. Does not readily sit in the open but remains hidden in the canopy. It occurs in and around towns such as Munda and Noro where large trees have been left standing. Often kept as pets in villages.

*Ptilinopus superbus* Superb Fruit Dove. Common resident of primary forest but uncommon in secondary forest or near human habitation.

*Ptilinopus viridis* Red-throated Fruit Dove. Abundant resident throughout the island. Often in association with *Ducula rubricera* in fruiting trees. Common in and around

townships where suitable trees are present. Generally remains in the forest canopy. This is the most commonly heard dove; its soft double-noted *coo* is one of the most characteristic calls of New Georgia.

*Chalcopsitta cardinalis* Cardinal Lory. This and the next species are among the most abundant and obvious of birds in New Georgia. Large flocks of Cardinal Lories occur in all lowland areas, particularly among coconut groves. Seen on all small offshore islands and frequently observed flying between major islands such as New Georgia, Rendova and Kolombangara.

*Trichoglossus haematodus* Rainbow Lorikeet (Coconut Lory). Abundant throughout, especially in coastal coconut groves. Like the previous species it occurs wherever trees are flowering and seems equally at home in primary forest canopy and village gardens.

*Cacatua ducorpsi* Solomons Cockatoo. Abundant and conspicuous throughout. It is most common in primary forest but occurs in and around villages where fruit is available.

*Eclectus roratus* Eclectus Parrot. Abundant in primary forest. Frequently observed, usually in pairs, in undisturbed forest adjacent to village gardens which it is said to raid for fruit crops. However, this practice was not observed.

*Geoffroyus heteroclitus* Song Parrot. Only observed once on New Georgia, where a pair was seen in secondary growth along the edges of recently established gardens in Noro.

*Centropus milo* Buff-headed Coucal. Common resident in primary and secondary forest as well as thickets in village gardens. It is not shy of human habitation and was commonly seen in secondary vegetation in Munda, such as that along both sides of the airstrip.

*Cuculus variolosus* Brush Cuckoo. Only noted in small numbers in summer. None were seen or heard at other times but as it may be silent in winter possibly overlooked. Recorded as abundant by Sibley (1951).

*Eudynamis scolopacea* Common Koel. Abundant resident of primary forest. Not often seen but numbers of birds have been heard calling throughout the year at Noro. Much of the calling takes place during the night.

*Collocalia esculenta* Glossy Swiftlet. Abundant in all forested areas. Most commonly seen flying low in cleared areas adjacent to primary forest but also common in well established gardens.

*Collocalia vanikorensis* Uniform Swiftlet. Abundant

over all habitats throughout the year. Generally flies well above the height of the forest canopy.

A large unidentified swiftlet was seen in July 1987 flying high over lowland forest between Munda and Noro.

*Hemiprocne mystacea* Whiskered Tree Swift. Abundant throughout the year. Most commonly seen in open areas adjacent to primary forest where it hawks insects from the tops of tall trees. However, it was also often seen sitting in the tops of tall trees among undisturbed forest.

*Alcedo atthis* River Kingfisher. Common resident in mangroves of the Lembu and Mbareke estuaries but scarce elsewhere. It was not seen along open shorelines.

*Ceyx pusilla* Little Kingfisher. Abundant resident in mangroves and coastal forest adjacent to water. All birds had a complete blue breast band and were of the subspecies *richardsi*.

*Halcyon chloris* Collared Kingfisher. Common throughout the year, particularly in secondary forest and along the edges of primary forest. Frequently seen in native gardens in Munda and Noro. It was not seen adjacent to water.

*Halcyon sancta* Sacred Kingfisher. Scarce winter visitor to New Georgia. The time of arrival in 1988 was between early July and early August. No birds were noted after the end of August. Usually observed on wires or exposed branches of roadside trees.

*Halcyon saurophaga* Beach Kingfisher. Resident along most shorelines but generally scarce. Seldom more than one individual observed in an area. Most often seen on the small offshore islands of Vona Vona and Roviana lagoons where it perches on coral rocks or on Hibiscus branches overhanging the water.

*Eurystomus orientalis* Dollarbird. Probably resident but only seen during the austral winter on New Georgia. Common in forest clearings, secondary growth with tall trees and on wires along the road. Not seen on any of the smaller offshore or lagoon islands.

*Aceros plicatus* Papuan Hornbill. This species was stated by Mayr (1945) to be absent from the Central Solomon Islands. During the present survey period it was found to be present on most visits. In July 1987, a pair was observed feeding in a roadside tree between Munda and Noro; in January 1988, three birds were seen flying over the mangroves of Ondongo estuary (leading into Diamond Narrows in West New Georgia) on two successive days; and in August 1988, a pair was seen over Vona Vona Lagoon. Mayr (1945) comments that a single record from

Vangunu may be erroneous: however, in March 1987, a pair was observed from a low flying aircraft over primary forest in West Vangunu. The species must be considered a resident of New Georgia although there are no breeding records.

*Hirundo tahitica* Pacific Swallow. Abundant resident of more open areas. Most often seen around towns and villages and perched on wires. The largest concentrations were seen around the tuna fishing base at Noro where large cleared areas of low lying land provide suitable feeding localities.

*Coracina lineata* Yellow-eyed Cuckoo-Shrike. Abundant resident of the primary forest. Seen feeding from the canopy down to about 3 m from the ground. Not observed in secondary growth or adjacent to human habitation but was seen in roadside trees contiguous with primary forest.

*Coracina papuensis* White-bellied (Papuan) Cuckoo-Shrike. Abundant resident throughout New Georgia. Most often seen in open country, secondary vegetation, gardens and in village trees. On a number of occasions it was observed flying over primary forest.

*Coracina tenuirostris* Cicada Bird. Present but seldom observed resident of the primary and secondary forest. It was not observed adjacent to human habitation.

*Monarcha barbatus* Solomons Pied Flycatcher. Common resident of the primary forest but also seen in secondary forest at Munda.

*Monarcha richardsii* Chestnut-bellied Monarch. Abundant resident of primary and secondary forest throughout New Georgia.

*Myiagra ferrocyanea* Broad-billed Flycatcher. Abundant resident of primary forest and occasionally seen in secondary growth at Munda and Noro.

*Rhipidura cockerellii* Cockerell's Fantail. Common along the forest edge but most abundant in secondary growth around gardens and airstrips.

*Rhipidura leucophrys* Willie Wagtail. Abundant in more open areas, open secondary growth and in villages. It is also common along the shoreline and on offshore islands of the lagoons. Birds have been found nesting just above high water mark in pipes used as navigation markers, and in World War II debris in lagoons.

*Rhipidura rufifrons* Rufous Fantail. Common resident of both primary and secondary forest throughout New Georgia. Also seen in mangroves.

Four of the flycatchers frequently formed mixed foraging flocks with the Rendova White-eye, *Zosterops rendovae* similar to those on Bougainville described by Diamond (1975). On New Georgia these flocks were usually led by *M. richardsii* followed in sequence by *Z. rendovae*, *M. ferrocyanea* and *R. rufifrons*. Such flocks were seen at low and mid storeys of the forest and were often accompanied by *M. barbatus* which kept to the upper storey.

*Nectarinia jugularis* Yellow-bellied Sunbird. Abundant wherever there are open areas. Most commonly seen in village gardens but also occurs along the edges of forest and in clearings deep within primary forest.

*Zosterops rendovae* Rendova White-eye. Abundant resident in almost all types of vegetation including primary forest but not noted in mangroves.

*Myzomela eichhorni* Central Solomons Honeyeater. Common although seldom seen resident. It was regarded as uncommon by Sibley (1951). Apparently prefers the canopy of primary forest but was seen in forest trees around village gardens in Noro. Usually stays at least 10 m from the ground even in secondary growth.

*Aplonis cantoroides* Little Starling. Abundant resident of secondary growth and villages. It was not seen in primary forest.

*Aplonis grandis* Brown-winged Starling. Abundant resident of primary forest but also seen in villages and towns where there are tall trees. Usually in pairs and seldom descending much below mid-canopy level.

*Aplonis metallica* Colonial Starling. The most obvious and abundant of the *Aplonis* species of New Georgia. It was found in both primary and secondary forest as well as village gardens. Nesting colonies noted throughout the island including one in a large tree in the centre of Noro township. This species may have increased in numbers since 1945 as it was recorded as uncommon by Sibley (1951).

*Mino dumontii* Papuan Mynah. One of the most obvious, abundant and vocal birds of the primary forest. It has remained common in areas of forest adjacent to developments at Noro and frequents native gardens.

#### Additional records

During January 1984 two *Vanellus miles* were recorded over three weeks at Munda airstrip by the Forestry Officer (G. Chaplin). The identification was confirmed by Ian K. Dawson who stated in a personal communication to G. Chaplin that they were of the subspecies *novaehollandiae*. This subspecies is resident in south and east Australia and this record represents the first for the Solomon Islands.

#### Species seen on adjacent islands but not on New Georgia

The following species were seen in lowland forest in south Kolombangara only 5 km across the water from Kohinggo: *Charmosyna margarethae* Duchess Lorikeet, *Ceyx lepidus* Dwarf Kingfisher and *Halcyon leucopygia* Ultramarine Kingfisher? The latter would be unexpected as the species has not previously been recorded on New Georgia nor in mangroves and was not heard calling. The bright white underparts, deep blue upperparts and white collar, and the perch position 20 m high, indicated this species. However, without further supporting evidence this single record cannot be confirmed. A single *Plegadis falcinellus* Glossy Ibis was seen at the extensive stone jetty at Lady Lever Plantation. I was alerted to its presence by Mr Graham Chaplin, the Forestry Officer; it had apparently been in the vicinity of the jetty for at least a week prior to my seeing it. This is the first record of this species for the Solomon Islands, although Hadden (1981) recorded it for Bougainville.

Two additional species were seen on Rendova in lowland forest on the north west side facing New Georgia: *Chrysococcyx lucidus* Shining Bronze Cuckoo and *Aplonis brunneicapilla* White-eyed Starling. Two White-eyed Starlings were seen foraging in the top (25 m) of a rainforest tree at the edge of the lagoon just north of Poko River: an area with rocks on the shore and no mangroves where some rainforest abuts the water. They were watched from a boat close to the shore. The bill was noticeably thick, making it look short, and the eye definitely white. They were not heard calling. Bill shape and eye colour separated it from *A. cantoroides*, *A. metallica* and *A. grandis* and it was also smaller than the last named. This rare starling was known previously only from Bougainville and Guadalcanal, with a single specimen from Rendova (Cain & Galbraith 1956; Finch 1986). The present observation on Rendova increases the probability that the single specimen collected previously was not a straggler but came from a population resident on Rendova.

#### Discussion

The avifauna of New Georgia judged according to the species recorded in this survey remains, at least superficially, similar to that recorded by the Whitney South Sea Expedition (Mayr 1945) and by Sibley (1951). Compared with the 70 species recorded here, Sibley (1951) noted 57 species while Mayr (1945) listed about 66 species. However, the present records differ with regard to the presence/absence of 12 species of land and freshwater birds (Table 2). Shore and marine birds are excluded from this comparison.

Two species, Buff-banded Rail and Papuan Hornbill, were recorded for the first time in this survey. The former is common in the region and its presence was not surprising

TABLE 2 Comparison between the records of this study, Sibley (1951) and Mayr (1945) for 12 species of land and freshwater birds from New Georgia (+ = recorded, — = not recorded).

Species	This study	Sibley	Mayr
<i>Amaurornis olivaceus</i>	-	+	+
<i>Gallirallus philippensis</i>	+	-	-
<i>'Nesoclopeus woodfordi'?</i>	+	+	-
<i>Gallicolumba beccarii</i>	-	-	+
<i>Macropygia mackinlayi</i>	-	+	-
<i>Micropsitta finschii</i>	-	+	+
<i>Ceyx lepidus</i>	-	-	+
<i>Aceros plicatus</i>	+	-	-
<i>Tyto alba</i>	-	+	-
<i>Caprimulgus mystacalis</i>	-	-	+
<i>Coracina caledonica</i>	-	-	+
<i>Pachycephala pectoralis</i>	-	-	+

but the large and noisy hornbill was unlikely to have been overlooked by previous observers. It occurs east of New Georgia on Guadalcanal and is common on Bougainville to the west (Hadden 1981). Habitat destruction or persecution (the bird is a favourite food item in west Guadalcanal and is shot in large numbers [author's unpublished records]) may have displaced birds to New Georgia; the species can fly considerable distances (Schodde 1977).

The 'Undescribed Rail' seen in this survey was possibly the same as that reported as *Nesoclopeus woodfordi* Woodford's Rail by Sibley (1951) and Finch (1985). Neither of these authors, however, provided supporting details, and although the present observations are compatible with Woodford's Rail, resolution of this matter will require a more detailed description. Woodford's Rail is listed by Diamond (1987) as possibly extinct and is obviously scarce. The status of this unconfirmed species in lowland forest is impossible to assess on present information but the loss of much of this habitat in New Georgia suggests that the species must be endangered.

Two species, Bush-hen and Pygmy Parrot, were listed by both Sibley (1951) and Mayr (1945) but not seen in this survey. They may have been overlooked but their characteristic calls were not heard. The Pygmy Parrot was described by Sibley (1951) as not uncommon in lowland jungle in flocks of three to six birds — the present lack of records from 1986 to 1988 indicate that its numbers may have declined. Another parrot, the Duchess Lorikeet, was seen on the neighbouring island of Kolombangara, only 5 km away, so its occurrence on New Georgia is possible. It has, however, not been recorded for New Georgia. The Barn Owl *Tyto alba* was not uncommon on New Georgia in 1945 (Sibley 1951) and may have been overlooked in this study. However, it was not listed for New Georgia by Mayr (1945) who stated that it is rare in the Solomons.

Five species listed by Mayr (1945) were not recorded by this study or by Sibley (1951) (Table 2). Two of these, *Coracina caledonica* Melanesian Cuckoo Shrike and *Pachycephala pectoralis* Golden Whistler are montane and probably occur on the central range of hills that were not visited; *Caprimulgus mystacalis* White-throated Nightjar and *Ceyx lepidus* Dwarf Kingfisher were probably overlooked; while *Gallicolumba beccarii* Grey-breasted Ground Dove may be extinct as no definite records exist since 1953 (Diamond 1987). There are no well-marked seasonal changes in climate on New Georgia and no apparent correlations between rainfall (Fig. 2) and the presence or absence of particular species.

Lack of data preclude speculation as to whether at least five of the species in Table 2 have declined or disappeared due to destruction of lowland forest. Nevertheless, among those species that were recorded (Table 1), seven occurred only in primary forest and not secondary growth or cleared areas, and hence are likely to be reduced in numbers by logging. Twenty-two species were found in both undisturbed and secondary forest and may be less affected by logging but their degree of dependence on primary forest for breeding is not clear. Of the two abundant pigeons, the Red-knobbed Pigeon has been recorded nesting away from primary forest (Sibley 1951) but a nest of the Red-throated Fruit Dove has only been found in primary forest (Schodde 1977). The nesting behaviour of even common species such as Solomons Cockatoo is unknown (Coates 1985).

Forest-edge species such as Whiskered Tree Swift and Yellow-bellied Sunbird were more abundant in cleared areas or gardens and may increase in numbers with forest clearance. Eleven species are more or less equally abundant in forest, open areas or gardens and include some of the more obvious species such as the Cardinal Lory, Rainbow Lorikeet, Solomons Cockatoo, Papuan Mynah and White-bellied Cuckoo-Shrike; they appear to be unaffected by habitat changes. Largest numbers of Pacific Swallows occurred around open areas adjacent to building developments and on electricity wires and the numbers of swiftlets were as great in developed areas as in primary forest. Mangroves remain undisturbed and hence species such as River and Little Kingfishers and Black Ducks are common to abundant.

From the foregoing it is evident that industrial development and logging have affected, and are influencing, the composition of the avifauna of New Georgia. While a number of forest species have declined, others may have increased in numbers. Also, geographically widespread non-forest species have generally benefitted from both logging and land clearance. Recent research on the effects of stress on multi-species assemblages indicates that three clear changes in community structure occur in response to stress (Gray 1989). These are reduction in diversity, retrogression to dominance by opportunist species and reduc-

tion in mean size of the dominating species. It is likely that destruction of forest habitat can be considered a stressor in this context and the first two community responses may already be evident in the New Georgia avifauna. It is important in this regard, to note that Gray (1989) considered that statistically significant reductions in diversity may only be recognised late in the sequence of stressor impact. Hence, although a considerable species diversity is still apparent in New Georgia, there is evidence of a shift towards opportunist species at the expense of an increasing number of primary forest species, some of which may be perilously close to extinction.

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